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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,502	10/03/2003	Yi-Tsung Cheng	HTCP0013USA	2501

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EXAMINER

BECK, ALEXANDER S

ART UNIT PAPER NUMBER

2629

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/605,502	CHENG, YI-TSUNG	
	Examiner	Art Unit	
	Alexander S. Beck	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>20040707</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) filed on July 7, 2004 has been acknowledged and considered by the Examiner. An initialed copy of the PTO-1449 is included in this correspondence.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Kerr* (International Publication No. WO 99/62180, hereinafter KERR) in view of *Schnizlein* (U.S. Patent No. 4,414,538, hereinafter SCHNIZLEIN).**

As to independent **Claim 1**, KERR teaches/suggests a keyboard in **FIG. 2** comprising: a key module (**100**) comprising at least one key cell (**Rn,Sn**) with an output end being selectively connected to a first voltage or a second voltage (e.g., dependent upon the particular switches

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closed/open) (KERR: page 4, line 15-19); and a detect circuit (206) electrically connected to the output end of the key cell for generating a control signal whenever the voltage on the output end of the key cell becomes the second voltage or the first voltage (KERR: page 5, line 16 – page 7, line 11).

KERR does not disclose expressly a parallel-to-serial register electrically connected to the output end of the key module; and a processor electrically connected to the parallel-to-serial register and the detect circuit for controlling the parallel-to-serial register according to the control signal.

SCHNIZLEIN teaches/suggests a keyboard in FIG. 1 comprising: a key module comprising at least one key cell (16) with an output end associated with an analog voltage level (SCHNIZLEIN: column 2, lines 24-33); a detect circuit (60,62) electrically connected to the output end of the key cell for generating a control signal whenever the analog voltage level of the output end falls below a fixed value which corresponds to a key depression (SCHNIZLEIN: column 3, line 63 – column 4, line 5); a parallel-to-serial register (64) electrically connected to the output end of the key module (SCHNIZLEIN: column 4, lines 2-5); and a processor electrically connected to the parallel-to-serial register and the detect circuit for controlling the parallel-to-serial register according to the control signal (inherently suggested in the parallel-to-serial register (64) for processing decoder (66) output only in response to a signal from detect circuit (60,62) representative of a key depression) (SCHNIZLEIN: column 4, lines 6-19).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the teachings of KERR such that the detect circuit comprised a parallel-to-serial register and electrically connected processor, as taught/suggested by SCHNIZLEIN.

The suggestion/motivation for doing so would have been to convert a parallel output signal representing a scanned key module into serial data for transmission to additional

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processing equipment only in response to a signal from the detect circuit representative of a key depression (SCHNIZLEIN: column 4, lines 6-19).

5. Claims 2-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Kerr* (International Publication No. WO 99/62180) in view of *Schnizlein* (U.S. Patent No. 4,414,538) as applied to Claim 1 above, and further in view of *Hackmeister* (U.S. Patent No. 4,027,306, hereinafter HACKMEISTER).

As to **Claims 2 and 3**, note the above discussion of KERR and SCHNIZLEIN.

Neither KERR nor SCHNIZLEIN disclose expressly wherein the detect circuit comprises at least one capacitor corresponding to each key cell within the key module and an amplifying circuit for amplifying the voltage in the capacitor.

However, the use of a capacitive element for storing a voltage and an amplifier to amplify the voltage level is old and well known in the art during the pre-processing steps of an electronic device for an improvement in processing. HACKMEISTER teaches/suggests a touch-responsive circuit and data input terminal in **FIGS. 1,2** comprising: a key module (11) comprising a at least one key cell (13') and a detect circuit (12) comprising at least one capacitor (26) corresponding to each key cell within the key module and an amplifying circuit (28) for amplifying the voltage in the capacitor (HACKMEISTER: column 3, line 63 – column 4, line 21).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further modify the teachings of KERR and SCHNIZLEIN such that the detect circuit comprised at least one capacitor corresponding to each key cell within the key module

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and an amplifying circuit for amplifying the voltage in the capacitor, as taught/suggested by HACKMEISTER.

The suggestion/motivation for doing so would have been to conduct a voltage indicative of a depression of the key cell followed by the sufficient amplification of the conducted voltage by an amplifier to a level applicable for use during processing (HACKMEISTER: column 4, lines 9-21).

As to **Claim 4**, KERR teaches/suggests wherein the detect circuit further comprises a set of comparators (**208N**) for comparing whether the voltage output from an output end (of the amplifying circuit as modified by HACKMEISTER) is in a predetermined range and generating the control signal accordingly (KERR: page 5, line 19 – page 6, line 14).

As to **Claim 6**, KERR teaches/suggests wherein following the comparison of voltages to a reference voltage by the set of comparators, it is determined that if the voltage is in a predetermined range a control signal is output and if the voltage is not within a predetermined range a control signal is not output.

KERR does not disclose expressly wherein the detect circuit comprises an OR gate for performing the step of determining whether a control signal is to be output.

However, the Examiner takes Official Notice that the use of an OR gate to perform a simple Boolean expression such as determining whether any of a plurality of inputs are high (e.g., determining which keys are within a predetermined range so as to output a control signal) is old and well known in the art.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further modify the teachings of KERR, SCHNIZLEIN and HACKMEISTER such

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that the step of determining whether a control signal is to be output was performed by an OR gate.

The suggestion/motivation for doing so would have been because OR gates are very common in the art, readily available, and cheap to manufacture.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Kerr* (International Publication No. WO 99/62180), *Schnizlein* (U.S. Patent No. 4,414,538) and *Hackmeister* (U.S. Patent No. 4,027,306) as applied to Claims 1-4 and 6 above, and further in view of *Johnson* (U.S. Patent No. 6,265,993 B1, hereinafter JOHNSON).

As to **Claim 5**, KERR as modified by HACKMEISTER teaches/suggests wherein the set of comparators comprises a positive comparator (**208N**) for generating the control signal when the voltage output from the output end of the amplifying circuit exceeds a positive reference voltage (KERR: page 5, line 19 – page 6, line 14).

KERR does not disclose expressly wherein the set of comparators comprises a negative comparator for generating the control signal when the voltage output from the output end of the amplifying circuit is lower than a negative reference voltage.

JOHNSON teaches/suggests a keyboard comprising a pair of detection means (72,74) for allowing the keyboard to separately identify positive and negative key group input signals and thereby distinguish key presses from key releases (JOHNSON: column 7, lines 56-65).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further modify the teachings of KERR, SCHNIZLEIN and HACKMEISTER such that the detect circuit comprised an additional means (e.g., comparator of KERR) for

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determining if a key has been released, which would require the analyzation of negative input signals (e.g., negative voltages), as taught/suggested by JOHNSON.

The suggestion/motivation for doing so would have been to identify positive and negative key group input signals and thereby distinguish key presses from key releases (JOHNSON: column 7, lines 56-65).

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Kerr* (International Publication No. WO 99/62180), *Schnizlein* (U.S. Patent No. 4,414,538) and *Hackmeister* (U.S. Patent No. 4,027,306) as applied to Claims 1-4 and 6 above, and further in view of *Figie et al.* (U.S. Patent No. 5,872,561, hereinafter FIGIE).

As to **Claim 5**, KERR as modified by HACKMEISTER teaches/suggests wherein the set of comparators comprises a positive comparator (**208N**) for generating the control signal when the voltage output from the output end of the amplifying circuit exceeds a positive reference voltage (KERR: page 5, line 19 – page 6, line 14).

KERR does not disclose expressly wherein the set of comparators comprises a negative comparator for generating the control signal when the voltage output from the output end of the amplifying circuit is lower than a negative reference voltage.

FIGIE teaches/suggests a fast scanning switch matrix with a set of comparators (40) comprising a positive comparator for determining when a voltage output exceeds a positive reference voltage, and a negative comparator for determining when a voltage output is lower than a negative reference voltage (FIGIE: column 4, lines 44-52).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further modify the teachings of KERR, SCHNIZLEIN and HACKMEISTER such that the detect circuit comprised a negative comparator, as taught/suggested by FIGIE.

The suggestion/motivation from doing so would have been to accommodate for a switching at different thresholds depending on the direction of the transition of the inputs from high to low or from low to high (i.e., the depression or releasing of a key) (FIGIE: column 4, lines 44-52).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Alexander S. Beck** whose telephone number is **(571) 272-7765**. The examiner can normally be reached on M-F, 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Sumati Lefkowitz** can be reached on **(571) 272-3638**. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

asb
4/19/06


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